0054784

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

01-ERD-044

MAR 13 2001

Mr. Douglas R. Sherwood
Hanford Project Manager
U.S. Environmental Protection Agency
712 Swift Boulevard, Suite 5
Richland, Washington 99352

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EDMC

Mr. Michael A. Wilson, Program Manager
Nuclear Waste Program
State of Washington
Department of Ecology
P.O. Box 47600
Olympia, Washington 98504

Addressees:

TRANSMITTAL OF THE "200-TW-1 SCAVENGED WASTE GROUP OPERABLE UNIT AND "200-TW-2 TANK WASTE GROUP OPERABLE UNIT RI/FS WORK PLAN," DOE/RL-2000-38, REV 0

Attached is a copy of the subject document for regulatory approval (Attachment 1). This work plan follows the streamlined approach for characterization and remediation of the 200 Areas as described in the "200 Areas Remedial Investigation/Feasibility Study Implementation Plan – Environmental Restoration Program," DOE/RL-8-28. The work plan contains the elements of a Comprehensive Environmental Response, Compensation, and Liability Act Remedial Investigation (RI)/Feasibility Study (FS) work plan. A sampling and analysis plan accompanies the work plan as appendices. This work plan is the culmination of integration efforts between Environmental Restoration and the Office of River Protection. Various projects within these groups participated in the data quality objectives process that is the basis of this document. Input from these projects was sought to ensure integration of data collection activities to meet the needs of the core projects of the Groundwater/Vadose Zone Integration Project. Revision 0 of this work plan incorporates changes based on regulatory review. Responses to regulatory comments on this work plan are attached to this letter (Attachment 2). Significant changes to the document include the following:

- Addition of a discussion of the geology and geotechnical parameters for the BC Cribs area (this was included at the request of The U.S. Environmental Protection Agency [EPA]);
- addition of a discussion of ecological information for the BC Cribs area (this was included at the request of EPA);
- additional sampling requirements to support Waste Management based on the results of a Waste Management Data Quality Objective process; and
- deletion of the waste control plan. This document will be submitted for approval under separate cover.

Also attached are the Hanford Federal Facility Agreement and Consent Order Change Packages that establish interim milestones for each of these operable units (OUs) (Attachment 3). Significant changes from the draft packages provided with the Draft A work plan include the extension of the interim milestones for the FS and proposed plan for these OUs to allow sufficient time to resolve land-use issues and ecological sampling requirements for the 200 Areas and to take advantage of lessons learned on the 200-CW-1 FS/Proposed Plan process.

On February 27, 2001, the Washington State Department of Health approved a Hanford Facility As Low As Reasonably Achievable Control Technology (ALARACT) Agreement Form entitled, "Environmental Restoration Program ALARACT Demonstration for Drilling," that establishes requirements for controlling and monitoring the spread of airborne contamination at drilling activities outside the tank farms fence lines. This document replaces individual OU specific air monitoring plans. Therefore, air monitoring plans will not be prepared to support the field activities at the 200-TW-1 and 200-TW-2 representative waste sites. All remedial investigation activities scheduled for this fiscal year for these OUs will be conducted in accordance with the approved ALARACT agreement. A copy has been provided as an attachment to this letter for your reference (Attachment 4).

If you should have any questions, please contact Bryan L. Foley, Environmental Restoration Division, on (509) 376-7087.

Sincerely,

Clifford E. Clark, Acting Program Manager
Office of Regulatory Liaison

ERD:BLF

Attachments

cc w/attachs:
J. H. Richards, CTUIR
L. J. Cusack, Ecology
J. Price, Ecology
R. F. Stanley, Ecology
L. C. Treichel, EM-43
J. S. Hertzel, FHI
O. S. Kramer, FHI
T. M. Martin, HAB
P. Sobotta, NPT
M. L. Blazek, Oregon Energy
R. Jim, YN
Admin Record, H6-08 (200-TW-1, and 200-TW-2)

cc w/o attachs:
B. H. Ford, BHI
M. J. Graham, BHI
C. D. Wittreich, CHI

Responses to Ecology and EPA Comments on the *200-TW-1 Scavenged Waste Group Operable Unit and 200-TW-2 Tank Waste Group Operable Unit RI/FS Work Plan*, Draft A
February 22, 2001

53713

Re: Letter from J. B. Price, State of Washington Department of Ecology, to B. L. Foley, U.S. Department of Energy, December 4, 2000, *200-TW-1/2 Work Plan.*

1. The TW-1/2 Work Plan does not adequately address the need for biological sampling per EPA's Ecological Risk Assessment Guidance for Superfund's *Process for Designing and Conducting Ecological Risk Assessments* (EPA 540-17-97-006). The significance of this deficiency is unclear because of the general deficiency of the U. S. Department of Energy's (USDOE's) approach to biological sampling in the 200 Area. Multiple reviewers (see below) have noted USDOE's continuing lack of focus on Ecological Exposure/Effects Assessment of the 200 Area throughout multiple work plans. USDOE's key assertion in response to those comments were:

"At this time, additional studies are not deemed necessary, as the information defined by the U. S. Environmental Protection Agency (EPA) in its "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (1988)" has already been collected." (Letter dated 9/21/99, from Bryan L. Foley, USDOE, to Jay McConnaughey, Department of Fish and Wildlife).

Ecology and EPA assert that the information that "has already been collected" has not been documented and compiled in a manner suitable to complete either the Remedial Investigation/Feasibility Study (RI/FS) scoping, or RI reporting process described in EPA's *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA: Interim Final*, October 1988. Ecology and EPA recommend that we meet to negotiate a date for submittal of an Ecological Assessment Remedial Investigation Report, with the expectation that this report can be completed in the current fiscal year (FY01). Please note that USDOE made the commitment to do this work in the Implementation Plan; therefore, Ecology and EPA do not view this as new work. It is our opinion that the report can be accomplished through review and compilation of the existing data that USDOE cited in its 9/21/99 letter. EPA's guidance provides the description of the report (see enclosed).

The Washington State Department of Fish and Wildlife (WDFW) noted the same deficiency in its review comments on the 200 Area Implementation Plan (letter from Jay McConnaughey, WDFW, to Bryan Foley, USDOE, Re: Comments on the document titled *200 Areas Remedial Investigation/Feasibility Study Implementation Plan – Environmental Restoration Program*, DOE/RL-98-28, Draft B). The WDFW has separately submitted comments to USDOE on individual 200 Area operable unit work plans.

Further, USDOE's own 200 Area Implementation Plan presents information that is inconsistent with USDOE's assertion that all of the necessary information has already been collected:

Section F8.2, Page F-15, 4th paragraph	The text acknowledges the role of wildlife in spreading contamination: "Badgers...have been suspected of excavating contaminated soil at 200 Area radioactive waste sites (O'Farrell et al. 1973)." This acknowledgement is inconsistent with the lack of direction on biological sampling within the Implementation Plan.
Section F8.4, Page F-16, 5th (4th full) paragraph	The text acknowledges the importance of biological vectors in contaminant transport: "Wildlife and plants in the 200 Areas have a history of taking up contaminants from waste sites through burrowing and root penetration (e.g., Johnson et al. 1991, 1994)." This acknowledgment is inconsistent with the lack of direction on biological sampling within the Implementation Plan.

Response: *A strategy to address ecological impacts in the 200 Areas is currently being developed. Elements of the strategy include the compilation of existing ecological data (surface soil sample data, radiological survey data, biota data, etc.) into a ecological summary report; a 200 Area map showing areas where ecological uptake has occurred, where surface soil contaminant concentrations exceed ecological protection standards, and where surface radiation has been detected; nonintrusive site evaluations in support of conceptual exposure models and identification of additional data needs; and a summary report of exposure evaluations.*

For the 200-TW-1/2 Work Plan, additional, site-specific information is being compiled for the BC Crib area. These data will be incorporated into the Rev. 0 work plan.

2. The relevant Federal Facility Agreement and Consent Order Change Control Form (M-13-99-01, dated 10/3/99) recognizes "The efficiency gained from integrating data needs and characterization efforts between two DOE programs" and asserts that "opportunities were identified to coordinate ER Program and ORP activities." Evidence of that coordination is noticeably deficient from the TW-1/2 Work Plan. For example, under a coordinated approach, it would be expected that the Data Quality Objectives (Section 4.1) would address the data quality objectives for the ORP tank remediation, and that the Data Uses (Section 4.2) would discuss the use of TW-1/2 data by ORP. Discussion of ORP needs and uses is noticeably absent from this work plan.

Response: *Integration activities were conducted starting before the TPA change package through the development of the 200-TW-1 and 200-TW-2 Work Plan and the T-TX-TY DQO summary report and work plan. Details of this integration will be added to the TW-1/2 work plan as documentation of the integration efforts.*

Change Number	Federal Facility Agreement and Consent Order **Change Control Form** Do not use blue ink. Type or print using black ink.	Date
M-15-00-04		February 28, 2001

Originator	Phone
Bryan Foley, DOE	376-7087

Class of Change

[ ] I – Signatories [X] II – Executive Manager [ ] III – Project Manager

Change Title

Interim Milestones for 200-TW-1 Scavenged Waste Group Operable Unit Assessment Activities

Description/Justification of Change

The 200 Areas Remedial Investigation/Feasibility Study (RI/FS) Implementation Plan (DOE/RL-98-28, Rev.0) established the framework for characterization of ER soil waste sites in the 200 Areas and grouped the waste sites into 23 process-based operable units (OUs). Based on the Implementation Plan, Tri-Party Agreement M-13 milestones were established (TPA Change Request M-13-97-01) for the submittal of RI/FS work plans for individual OUs. The 200-TW-1 OU RI/FS work plan was assigned to Tri-Party Agreement interim milestone M-13-23 (TPA Change Request M-13-99-01) which was met with the submittal of the 200-TW-1 and 200-TW-2 Draft A Work Plan.

As specified in the Tri-Party Agreement, Section 11.6, work plans must specify interim milestones for the OU's that identify completion dates for major tasks and deliverables specified in the work plans. The 200-TW-1 OU work plan includes a project schedule with target project milestones. Based on this work plan schedule, the following interim milestones are proposed under the Tri-Party Agreement to implement the activities for the RI/FS process for this OU:

M-15-41A: Complete the 200-TW-1 OU Field Work through Drilling and Sample Collection – ~~September 2002~~ 3-~~1~~, 2001
M-15-41B: Submit the 200-TW-1 OU Draft A Remedial Investigation Report to EPA – October 30, 2002
M-15-41C: Submit the 200-TW-1 OU Draft A Feasibility Study and Draft A Proposed Plan to EPA – ~~March 31, 2003~~ ~~November 15, 2002~~.

These interim milestone dates are consistent with the major milestone M-15-00C to complete the 200 Area operable unit RI/FS process by 2008.

Impact of Change.

Addition of interim milestones under M-15-00C.

Affected Documents

The Hanford Federal Facility Agreement and Consent Order, as amended.
200-TW-1 Scavenged Waste Group Operable Unit and 200-TW-2 Tank Waste Group Operable Unit RI/FS Work Plan.
DOE/RL-97-44, Rv.3, Vol.3, Richland Environmental Restoration Project Fiscal Year 2001-2003 Detailed Work Plan, Groundwater/Vadose Zone Integration Project

Change Number	Federal Facility Agreement and Consent Order Change Control Form Do not use blue ink. Type or print using black ink.	Date
M-15-00-04		February 28, 2001

Approvals

D. Wade Ballard DOE	3/12/01 Date	✓ Approved	____ Disapproved
____ EPA	____ Date	____ Approved	____ Disapproved
____ Ecology	____ Date	____ Approved	____ Disapproved

Change Number	Federal Facility Agreement and Consent Order Change Control Form Do not use blue ink. Type or print using black ink.	Date
M-15-00-05		February 28, 2001~~February 28, 2001~~

Originator	Phone
Bryan Foley, DOE	376-7087

Class of Change

[ ] I – Signatories [X] II – Executive Manager [ ] III – Project Manager

Change Title

Interim Milestones for 200-TW-2 Tank Waste Group Operable Unit Assessment Activities

Description/Justification of Change

The 200 Areas Remedial Investigation/Feasibility Study (RI/FS) Implementation Plan (DOE/RL-98-28, Rev.0) established the framework for characterization of ER soil waste sites in the 200 Areas and grouped the waste sites into 23 process-based operable units (OUs). Based on the Implementation Plan, Tri-Party Agreement M-13 milestones were established (TPA Change Request M-13-97-01) for the submittal of RI/FS work plans for individual OUs. The 200-TW-2 OU RI/FS work plan was completed under Tri-Party Agreement Interim Milestone M-13-24 (TPA Change Request M-13-99-01) which was met with the submittal of the 200-TW-1 and 200-TW-2 Draft A Work Plan.

As specified in Tri-Party Agreement Section 11.6, work plans must specify interim milestones for the OU's that identify completion dates for major tasks and deliverables specified in the work plans. The 200-TW-2 OU work plan includes project schedules with target project milestones. Based on these work plan schedules, the following interim milestones are proposed:

M-15-42A: Complete 200-TW-2 OU Field Work through Drilling and Sample Collection – ~~September 30~~October 31, 2001
M-15-42B: Submit 200-TW-2 OU Draft A Remedial Investigation Report to Ecology – September 30, 2002
M-15-42C: Submit 200-TW-2 OU Draft A Feasibility Study and Draft A Proposed Plan/Proposed Permit Modification to Ecology – ~~November 30, 2003~~March 31, 2004.

These interim milestone dates are consistent with the major milestone M-15-00C to complete the 200 Area operable unit RI/FS process by 2008.

Impact of Change.

Addition of interim milestones under M-15-00C.

Affected Documents

The Hanford Federal Facility Agreement and Consent Order, as amended
200-TW-1 Scavenged Waste Group Operable Unit and 200-TW-2 Tank Waste Group Operable Unit RI/FS Work Plan.
DOE/RL-97-44, Rv.3, Vol.3, Richland Environmental Restoration Project Fiscal Year 2001-2003 Detailed Work Plan, Groundwater/Vadose Zone Integration Project

Change Number	Federal Facility Agreement and Consent Order Change Control Form Do not use blue ink. Type or print using black ink.	Date
M-15-00-05		February 28, 2001~~February 28, 2001~~

Approvals

W. Wade Ballard DOE	3/12/01 Date	✓ Approved	____ Disapproved
____ EPA	____ Date	____ Approved	____ Disapproved
____ Ecology	____ Date	____ Approved	____ Disapproved

Hanford Facility ALARACT Agreement Form
Title: ENVIRONMENTAL RESTORATION PROGRAM ALARACT DEMONSTRATION FOR DRILLING

Emissions Unit:	References:
Drilling Activities Outside the Tank Farms Fence Line on the Hanford Site	

1. Description of Activity:

Drilling, outside of the Tank Farms fence line, is conducted to meet multiple needs on the Hanford site. These include, but are not limited to, the installation of groundwater monitoring wells, extraction wells, injection wells, vadose zone characterization, aquifer/river sampling tubes, etc. The drilling methods currently used include cable tool, sonic, air rotary, diesel hammer, and direct push technologies as described in Attachment 1. In some cases, more than one method (e.g. air rotary and cable tool) may be used to complete a boring. All drilling and well decommissioning activities are conducted in compliance with WAC 173-160.

The drilling process generates wastes, such as soil cuttings, purge water, decontamination fluids and other wastes that are managed in accordance with applicable regulations and ERC procedures. Soil and/or groundwater samples may be taken during the drilling process. Upon reaching the desired total depth, some borings are completed as groundwater monitoring wells. Groundwater wells and borings that have no further intended purpose are decommissioned.

The drilling and sampling equipment is cleaned between borings to prevent cross contamination. Equipment cleaning techniques for push technologies include wiping/scrubbing with clean paper towels and/or rags, and may be followed by a 3-bucket wash. These methods are used to remove smearable contamination prior to transporting the equipment to another location. These methods are also used for the other drilling techniques. High temperature and pressure (180°F & 1000psi) washing at a decontamination pad is necessary as a final cleaning step for some drilling equipment.

Abrasive decontamination methods are sometimes needed to remove small isolated areas of fixed contamination after all smearable contamination has been eliminated. It may consist of scrubbing the contaminated area with a wire brush (or other mechanical means) using an approved cleaner, or removing a thin layer of metal using a metal file and/or sandpaper.

2. Specific Controls:

- BHI radiological, waste management, sampling, decontamination, drilling, decommissioning, transportation, and health & safety procedures are followed.

- A Radiological Risk Assessment is conducted prior to, and for, each prospective drilling location. A Radiological Risk Assessment Checklist is completed, and a Hanford Site Excavation Permit is completed and approved. A Radiological Work Permit (RWP) is completed for all High Risk intervals to be drilled.

- A ranking system is used at each drilling location (and the intervals within, as appropriate) of Low, Medium, or High Risk. It is important to note that different depth intervals may have different risk levels in the same well. Controls are upgraded and downgraded according to

the interval exposed during the drilling process.

- Controls are based on risk level and the site-specific drilling location.

  High Risk borings (e.g., those located in a crib, pond or ditch) are drilled using methods that have the least potential for air releases (i.e., not air rotary). The equipment is wiped clean as it is brought out of the boring. Core barrel samples are contained in plastic sleeves and the bottom tied off. The sleeves and drill cuttings are placed into appropriate containers for analysis and/or disposal. Continuous radiological control technician (RCT) coverage is provided for the duration of the High Risk drilling. The RWP identifies radiological conditions, establishes worker protection and monitoring requirements, and contains specific approvals for radiological work activities. When characterizing highly contaminated waste sites a HEPA ventilated glove bag or enclosure is used to obtain samples of the cuttings.

  Medium Risk borings (e.g., those located within 50 feet of a crib, pond or ditch) are evaluated on a case-by-case basis and controls depend on site-specific factors. In most cases, the boring is drilled in a conservative manner using methods that have the least potential for air releases (i.e., not air rotary). Continuous RCT coverage is provided. If radioactivity is detected, the work is immediately stopped, and the boring is upgraded to High Risk with appropriate controls in place prior to proceeding.

  Low Risk borings (balance of the Hanford site) may be drilled with any of the methods described in Attachment 1. If using air rotary techniques, water may be added to minimize dust and assist in cuttings removal. RCT surveys are conducted either every morning or afternoon to verify the absence of contamination. If radioactivity is detected, the work is immediately stopped, and the boring is upgraded to High Risk with appropriate controls in place prior to proceeding.

- Drilling equipment is checked for contamination prior to moving it to a new location. Smearable contamination is removed by the manual methods discussed earlier. It is sometimes necessary to apply a fixative or to wrap the area to prevent the spread of contamination that is not easily washed or wiped off. High temperature and pressure (180°F & 1000psi) washing is necessary as a final cleaning step for some drilling equipment.

3. **Air Monitoring:**

- Air monitoring is required for drilling in High Risk intervals. Existing near-facility air monitoring stations will be utilized when possible. If existing near-facility air monitoring stations do not provide adequate coverage for the predominate wind direction, additional monitoring will be conducted.

4. **Records/Documentation:**

- Radiological Work Permit, if applicable.

- Analytical results from the near-facility air monitoring station.

5. **Emission Pathway:**

- Potential fugitive emissions.

6. **Facility Description:**

- Hanford Site outside of the Tank Farms fence line.

7. **Notification:**

Notify the DOH of all drilling locations prior to initiating field activities and in the event that unanticipated contamination is encountered.

Reviewed by Contractor:	Reviewed by RL:	Approved by WDOH:
L. R. Curry 2/27/01	M. J. Furman 2/27/01	A. W. Conklin 2/27/01
G. A. Day 2/27/01	P. Gruping	
Date	Paul J. Thompson 3/6/01	
	Date	Date

ATTACHMENT 1

The following is a description of drilling techniques that may be utilized in areas outside of the Tank Farms fence line.

Cable Tool Drilling:
A temporary drive casing and cuttings drive barrel is driven into the soil by mechanical means at ground surface. The outer drive casing prevents caving of the formations penetrated as the hole is advanced. Once filled, the barrel is withdrawn to the surface and the cuttings are emptied from the barrel into an appropriate waste container, or to ground surface, depending on environmental and health risk determination. "Hard tool" cable tool drilling is used in difficult to penetrate formations. In this case, water is added to form a slurry at the bottom of the hole to facilitate cuttings removal by means of a wire-line bailer. With either method, if contamination levels of concern are present, the cuttings are placed in a containment drum for appropriate disposal. This process is repeated until the drive casing reaches the desired depth. The inner barrel is then withdrawn, and the drive casing is incrementally pulled back to the surface as well completion components are installed, or plug back materials are placed if the hole is decommissioned.

Sonic Drilling:
This drilling method consists of a drive casing and may include an inner cuttings barrel system. A vibration is induced in the drive casing system and it is mechanically pushed into the formation. As the system advances, formation materials are compressed as the tool advances. If sampling is desired, an inner sample barrel can be installed to capture a sample of the material penetrated. Excess material is compressed outside the drive casing. The drive casing/inner barrel assembly is advanced incrementally to obtain a sample, the inner barrel is withdrawn, and the cuttings are contained or discarded, as described above. This process is repeated until the drive casing reaches the desired depth. Boring completion or decommissioning is similar to the cable tool method.

Direct Push Technologies:
Push technology is conducted on the Hanford site using cone penetrometers, Geoprobes™[1], and hand driving techniques. The Geoprobe and cone penetrometers utilize hydraulics to push small diameter rods (1-3") into the formation by using the weight of the heavy truck as resistance. The system minimizes contaminant exposure since there are no drill cuttings or exhaust air as the hole is advanced. An instrumentdd real-time sensor can be used on the cone penetrometer to obtain formation parameters as it is being pushed, and a detachable (pull-back) shoe can be opened to obtain formation or groundwater samples by means of a retrievable inner wire-line tool. Limited geophysical logging can also be conducted in these holes using very small diameter tools compatible with steel casing. Hand driving for aquifer tube installation uses sledges, portable jackhammers, etc., to mechanically drive ~1" diameter rods to very shallow depths (<30 ft). A miniature screen with attached polyethylene tubing is placed in the hand driven

[1] ™ Geoprobe is a registered trademark of Geoprobe Systems, Slaina, KS

holes prior to with drawing the rod. The Geoprobe is sometimes used to support aquifer tube installations, and sonic technology can be used to assist small diameter cone penetrometer rod penetration.

Air Rotary Drilling:
This drilling method consists of a dual-wall casing, assembly consisting of an outer drive casing and an inner rotary drill stem and bit assembly. The outer drive casing is driven from ground surface, or hydraulically pushed down, as the inner rotary assembly advances into the formation. Air is injected through the inner drill stem/bit and flushes the cuttings up the drive casing/drill stem annulus. Cuttings are handled as above. Advancing the boring is generally continuous since cuttings are removed as the boring is advanced. Water may be added to the air stream to assist in lifting the cuttings and to minimize dust emissions. Return air is put through cyclone separators to remove solids and minimize dust. This process is repeated until the drive casing reaches the desired depth. Boring completion or decommissioning is similar to the cable tool method.

Diesel Hammer Drilling:
The drive casing in this drilling method is advanced using a diesel hammer technique. Drill cuttings are removed using an inner core barrel on a wire-line system. Cuttings are handled as above. This process is repeated until the drive casing reaches the desired depth. Boring completion or decommissioning is similar to the cable tool method.